

THE HISTORY OF THREE CASES OF PECULIAR MOTOR MANIFESTATIONS IN THE INSANE.¹

BY H. A. TOMLINSON, M.D.,
OF ST. PETER, MINN.

SUPERINTENDENT ST. PETER STATE HOSPITAL, ST. PETER, MINN.

These cases are reported as illustrating the bizarre and extreme manifestations of motor disturbance as they occur among the insane. They practically never have an organic basis; and although they frequently seem to have a focal origin; yet, even when recovery does not take place, and the patient dies, we have, so far, never found any evidence of a focal lesion.

Our experience with the motor disturbances associated with insanity, and especially those degenerative forms: disseminated cerebro-spinal sclerosis, the ascending form of general paralysis, and hereditary chorea: which link disease of the brain with that of the general nervous system; suggests the possibility that nervous disease independent of insanity may be due to like causes, operating in a more limited field, and resulting from a more definite reduction of potentiality, or exhaustion of capacity. In other words; that the diseases of the bulbo-spinal nervous system, are not so much specific conditions, as they are the sequence of slowly or rapidly developed degenerative change in certain parts of a congenitally defective structure, in which the capacity in these parts was limited; so that a sufficient strain, overuse, or disease, would set up a process of decay which would be progressive. It is interesting to note in this connection that we not infrequently see, among the insane, almost every form of focal disease imitated by the effect of chronic uremic poisoning upon the general nervous system; and some of these effects persist during the life of the patient.

G. Z., German, married, a farm hand, 43 years old, 5 feet 10 inches high, eyes blue, and hair brown. Had recently come to America, and no history of his past life or heredity could be

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obtained. It was stated, however, that he was "partly insane" when he came to America. He was brought to the hospital because he had persecutory ideas, feared personal injury; and was disposed to be violent toward his family and neighbors.

He was in good physical health apparently, had a good appetite, and slept well. He appeared to be intelligent, had good manners, spoke fluently in his own language, and gave evidence of a fair degree of education. At first he was very much disturbed, suspicious of every one, and in constant fear of personal injury. He was either dull and indifferent, or disturbed and agitated; and when in the latter condition complained of constant dull headache, and said that he did not sleep well. However, he took part in the regular occupations of the ward, and also went out walking. After he had been in the hospital for about two months, during a period of unusual depression and agitation, he ran away; but was found the next day hiding in an old farm house. He said he feared he was to be "killed;" begged that he might be "shot and not tortured;" also that his "sentence" might be "commuted to life imprisonment." The headache was worse at this time, and he developed an angioneurotic edema in the left forearm. His physical condition exaggerated his morbid self-consciousness and depreciatory ideas; so that everything in his surroundings was pregnant with suggestion. He was too confused to recognize any well-defined expressions of hostility from those about him, although there was evident auditory hallucination; which, associated with some untoward experience in his past life, suggested the persecutory ideas which dominated his active consciousness and filled him with dread and fear. During this time, however, he took plenty of food, and when he was at work was apparently comfortable. He did not sleep well, however, and grew more depressed; careless and indifferent with regard to his clothing and appearance, and took no interest in his surroundings. During the next month he took on flesh very rapidly, became more stupid and indifferent, his face expressionless, and he did not answer when spoken to; although he apparently understood what was said to him. It was noted at this time that there was some paresis of the muscles of the left forearm, and general paresis; in so far as to make him awkward in his movements, so that he stumbled in walking and was unable to work. In the early part of the next month he began to complain of being unable to see well with his right eye. One week later he could not see well with either eye, and could not read. Shortly after this he was found, soon after going to bed, to be in a tonic convulsion, apparently involving all of the voluntary muscles. He remained rigid for more than an hour, was

completely anesthetic, but apparently fully conscious. The next morning there was marked evidence of paresis on the left side, including the face. He could move about, but was very awkward. The motor symptoms disappeared gradually during the next month, but he had occasional convulsive seizures, which were always tonic. He lost in weight and strength, took little food, and was apparently neither able to work nor read.

Up to this time he had always conversed intelligently on subjects with which he was familiar, but now he became incoherent. He was kept in bed on account of his physical condition, and because he complained of pains in various parts of the body. There was no tenderness nor soreness, however; and during the day, when not watched, he would get out of bed, stand in a corner of the room, and watch furtively, as if he feared to be attacked.

There was no marked variation in his mental condition during the next month, and his persecutory ideas persisted. Toward the latter part of the month he had another convulsion lasting several hours, and the muscles of the jaw remained rigid for four days. During this convulsion, and afterward, he was apparently insensible; respiration became very rapid, the rate reaching as high as 60. During this time only the left side of the chest expanded. There was no cyanosis. He slowly recovered his former physical condition, but still complained of various pains, especially under the eyes and in the right ear.

During the next month he had an attack of dysentery, which was epidemic in the house at the time. His illness did not affect his mental condition, but there was no return of the convulsions.

During the next two months he had occasional convulsive seizures of short duration, and gradually passed into a condition of painful stupor. The vegetative functions were performed normally, but the excretions were passed apparently unconsciously. During the latter part of the period the convulsions became irregular in their onset, and instead of simple rigidity, the body was rotated to the left, and the knees drawn up to the chin. He had at one time 20 successive convulsions within a few hours. Even when the muscles were apparently relaxed there was marked resistance to any effort to flex or extend the limbs; the condition resembling pseudo-catalepsy.

During the next month the convulsions were comparatively frequent, and of such a character as to warrant detailed description. The patient was in bed, apparently unconscious of his surroundings. The body would suddenly become rigid; respiration hurried and noisy. After a varying interval, the eyelids would begin to quiver; then the distal phalanges of the fingers and

toes would begin to move; and this movement progressed symmetrically and successively from joint to joint, until all four limbs were in motion. Then the muscles of the trunk became involved from below upward, and finally the muscles of the face. The movement was that of a violent tremor, apparently affecting all of the voluntary muscles. It subsided gradually until the tremor became fibrillary. Then there was complete relaxation. During the stage of rigidity he could be placed with the back of his neck resting on one support, his heels on another, like a trestle board; and considerable weights could be piled on his abdomen without affecting the rigidity.

During the next year there was very little variation in his condition. He remained in bed, was stupid and filthy, but took plenty of nourishment, and slept well. He also had occasional convulsions. In the latter part of the period he began to cough and expectorate. Soon after this, he began to be disturbed, got out of bed, and if not watched would attack the other patients, and break windows. One day he beckoned the physician to him and told him that he had been advised to speak, and to say that he had a pain in his breast. From this time on he spoke freely and intelligently, and began to take an active interest in his surroundings.

He was weak physically, and during the next two months coughed and expectorated a great deal. His ankles became edematous also. So far as could be determined, the condition of the lungs was due to a chronic edema. There was no elevation of temperature, and no tubercle bacilli were present. By midsummer he began to improve physically, and from this time on improved steadily, both mentally and physically; until after a period of four months he was entirely well and went home. Nothing has been heard from him since.

J. B. S., German, single, 40 years old; eyes gray, hair brown; height 5 feet 8 inches, weight 147 lbs.; laborer.

Nothing could be learned of his family or personal history, except that his parents were living, in good health; but the father intemperate. The patient is said to have always been "feeble-minded," and since he reached manhood an habitual drunkard. Ten days before admission he was struck on the head with a rock. A week afterward he became disturbed, wandered about trying to hide himself; said that he feared that he would be murdered; that he saw people after him, and heard them threaten to kill him. He also complained of pain in the head and flashes of light before his eyes.

He was too much disturbed to admit of a careful physical examination. He had a good appetite, but digestion was im-

paired, and he was constipated. The urine was decreased in amount; sp. gr. 1.025; urea and chlorides reduced, but no other abnormality was apparent. The eyes were suffused, conjunctivæ congested; expression that of furtive suspicion. He was disturbed, apprehensive; sat up in bed, swaying from side to side, wringing his hands, and beating his breast. When any one came near him, he would shake his head violently, whine and snarl; shout, "Murderers, murderers, murderers, all murderers; they are going to murder me; the rich devils are after the poor man." When alone he was quiet, and with one to whom he was accustomed he would talk rationally about ordinary things. During the first forty-eight hours after his admission to the hospital he was more quiet, took nourishment freely, and slept fairly well at night. The constipation was relieved, but the urine continued scanty in amount. Any attention disturbed him. He would growl like a dog, strike himself in the face; and attempt to bite and scratch the nurse. During the periods of quiet he would say that he could not help acting as he did, because people were after him, trying to kill him. During the next week there was no material change in his condition. He slept well under the influence of hypnotics, took nourishment when given to him, and his bowels moved daily under the influence of laxatives. In the day time, however, the visual and auditory hallucinations were persistent, and the fear of personal injury ever present. There was no elevation of temperature, although the surface of the body was flushed, and the skin hot and moist. During the next two months the only change in his mental condition was a growing incoherence. He did not take food voluntarily, and became filthy in his habits. At the end of this time he became more restless; his former loud denunciation lapsed into incoherent muttering, and he was constantly trying to get out of bed. When allowed to do so he would crawl under the bed and try to hide himself. During the next month he grew weaker, did not try to sit up, and when put on his feet apparently could not stand. When not disturbed he would lie with his eyes closed, muttering and whispering incoherently to himself.

During the next year his condition remained practically unchanged. He had to be fed mechanically, was filthy in his habits, the delirium persisted; and the paresis of the lower extremities became more and more marked. His general physical condition was better, however. A little later he began to complain of loss of vision, and could not distinguish the different objects about him; but said that he could see "squirrels," "crickets," "snakes," and "bugs," about the room. During the next three months he was quite stupid, filthy in his habits, and

most of the time had to be fed mechanically. The loss of vision was apparently complete, and there was not even a light reflex. He was occasionally disturbed for short periods; usually manifested alarm for his personal safety; complained of many ill feelings; and also of disagreeable sights and sounds about him. By dint of persistent effort, and questioning, however, he could always be made to manifest some intelligent appreciation of his immediate environment.

About this time there began contracture of the muscles of the leg and thigh, and during the next month the legs became flexed upon the thighs, and the thighs partially flexed upon the abdomen. They could not be extended, and he always complained of great pain when the effort was made to extend them. During the next two months he improved physically, but still had to be fed mechanically. As he grew stronger he became boisterous; complained bitterly of the way he was abused, and was constantly talking about the things he saw and heard about him, which were alarming or offensive. It was apparent at this time, also, that he could see something of the objects by which he was surrounded; although he would disclaim this capacity if asked about it. During the next nine months he gradually improved physically; his body became robust and vigorous, but the lower extremities remained rigidly contracted. The muscles were extremely atrophied, and there was very little evidence of sensation. He was noisy, garrulous; alternately fawning in manner and fulsome in speech; or profane and abusive. He also became very self-conscious, enjoyed personal attention, and resented any apparent neglect. Visual and auditory hallucinations were active and persistent, and when his attention was not attracted by some one speaking to him, he was constantly and vociferously answering what he heard or disclaiming against what was said. He was especially troubled because the voices made lewd proposals to him, or accusations, and these he attributed to the nurses. He insisted that he could not see, but recognized people by their voices. He would not eat in the presence of others; but if food was put where he could get it, and he thought no one was near, he would eat it.

Sept. 1, 1899, he was put in bed, complaining of colic and diarrhea. There developed an entero-colitis, with frequent bloody stools, and tenesmus. He would not take food voluntarily, slept little; complained a great deal, but would not answer questions. He became very much emaciated, and very weak. After the first week of his illness, his legs gradually straightened out, the flexion of the thighs relaxed, and he could move his lower extremities with comparative freedom.

His illness lasted three weeks, and at the end of this time

he was almost a skeleton; but with the beginning of convalescence his appetite became ravenous, and he gained rapidly in weight and strength. He insisted, however, that he could not walk; although he dressed and undressed himself, and made his own toilet. As he grew stronger, the visual and auditory hallucination returned; he heard and saw "Satan," and numerous "devils" about him; often became noisily profane and obscene; denouncing them for tormenting him. He walked about with crutches; and it was noticed that, when he thought he was not observed, he would drag the crutches and walk without their aid. In the spring he was carried out of doors; where he could crawl about, talking to himself and complaining to any one who would listen about his ill treatment by "Satan" and the "devils." One day, when he thought he was not observed, he got up from the grass and walked quite a distance, but as quick as he heard any one near he would drop to the ground. The next day he was told that he must walk to the house himself, as no one would carry him in. He remained out for an hour after the other patients came into the house, but when he heard them eating supper could not stand it any longer; got up from the ground and came hobbling into the house, whining and complaining about his ill treatment. After this he made no pretence of being unable to walk nor of not seeing; rapidly regained his strength, became robust, and spent most of his time in walking.

He is now very vigorous, spends all of his time out of doors; his vision is acute, but the eyes have the expression of sightlessness. There is no evidence of motor involvement of any kind, but he is demented, although constantly plagued by the devils he sees and hears; the voices often coming from inanimate objects about him, and accusing him of all sorts of misbehavior.

A. F., a girl, 14 years old. She was quite stupid when admitted to the hospital, but in good physical health. No history of the family was obtained, nor of the patient, except that she was said to have suffered from convulsions for about a year before coming to the hospital, and had been quite violent at times. She was evidently a low-grade imbecile. She would answer questions, express her wants and care for herself; but was restless, irritable, and there was occasional muscular twitching; but no convulsions after coming to the hospital. The twitching gradually gave way to incoördination; she ceased to be able to walk, and was put in bed. The degeneration proceeded rapidly, and paresis became quite marked. The vegetative functions remained intact, and those of the bowels and bladder were performed automatically. For a time she was emaciated, but

afterward became well nourished. Her muscular activity was automatic, and the movements of the limbs were purposeless like those of an infant. Her mental functioning was entirely rudimentary; she laughed and cried like a baby, but had no articulate expression; was entirely without comprehension of spoken words, and indeed an infant; without capacity to relate or coördinate external impressions.

After a time she began to make articulate sounds, and gradually the simplest coördinate movements; such as grasping an object, and carrying it to her mouth. Next she began to sit up, then gradually to get about, and finally to walk. After getting up and about the ward, a process of reëducation was begun, and she eventually acquired sufficient capacity to care for herself, sew, read a little, and carry on ordinary conversation on subjects pertaining to her environment.

It will be noted that in the first and third cases there was no paralysis, but on the contrary, so far as could be determined, muscular power remained intact. In the first case the apparent loss of power was due to general spasm, while in the last it was due to incoördination, and it is probable that the inability to articulate was also the result of incoördination.

The nearest approach we have to a similar condition due to organic involvement is in those cases of chronic hydrocephalus where the fluid in the lateral ventricles accumulates so rapidly that the cortex is compressed against the cranial wall, and there results general spastic tremor and sometimes convulsions. Here of course the source of the motor manifestation is in the mechanical irritation from pressure. Another analogous condition is that existing in status epilepticus, but here too the cause is practically mechanical, the condition resulting from engorgement and edema, which sometimes have their origin in failure of the function of the kidneys, but more often in failure in the function of the brain, resulting from exhaustion; and, post-mortem, the evidence of cell fatigue is all that is found.

The third case was incorporated in this record because it offers the best basis for an hypothesis as to the pathology of these conditions; and unfortunately any explanation must be hypothetical, because we have no histologic basis from which to determine their pathology.

The complete recovery so far as motor capacity was con-

cerned, the return of the power to articulate, the later improvement in verbal capacity as the result of training, and the acquisition of a fair degree of manual dexterity, show that no permanent damage was done to the neurone. We have not had many opportunities for study of the brains of the feeble-minded before the ordinary terminal processes of degeneration had begun, but the few cases we have examined did not present anything peculiar histologically, outside of the gross differences common to the defective. There was evident only an apparent numerical difference in the cells in a given cortical area, with a relatively greater proportion of neuroglial tissue.

The most apparent explanation is the general reduction of capacity from exhaustion or autointoxication, resulting in the production of excessive irritability and hypertension. This explanation might apply to the first and second case, but not to the third, for the patient was in good physical condition at the beginning of the manifestation of motor disturbance.

However, the progressive emaciation which went along with the loss of muscular coördination would suggest that there was some trophic involvement. In the record of a case of general paralysis reported by me ("Sensory and Sensory Motor Disturbances," *JOURNAL OF NERVOUS AND MENTAL DISEASE*, for Oct., 1892) this same progressive development of incoördination with loss of the power of articulation was present, and in this case too there was a relatively complete restoration.

To the careful student of insanity there is no one element so conspicuous as the tendency of its manifestations to occur in cycles. Excitement to be followed by depression in both motor and mental disturbance, or its converse; with a period of apparent restoration between. Furthermore this wave-like tendency is most marked in those who are most defective, and is most conspicuous in those individuals who break down in early life.

In the defective individual whatever gives rise to the outbreak of mental disturbance also starts the process of reduction in capacity for coördination of functional activity in the nervous system, and this process once started seems to have a tendency to proceed definitely to a certain degree, and this is most

marked in those in whom the process of degeneration starts earliest, and in these subjects the reduction is most extreme. The presence of motor manifestations in some, and not in others, is accounted for by the antecedence of some form of motor involvement, as in the cases included in this report. In two of which there was hysteria, and in the other convulsions.

Each cortical cell has a definite potentiality, and a capacity governed by the completeness of its reconstitution. Temporary conditions may exist, which exhaust capacity, and confusion supervenes; to be followed by incoördination. This is illustrated in the mental and motor disturbance accompanying typhoid fever, pneumonia, or septicemia; and in more marked degree in chronic uremia. These conditions are recovered from, however, and capacity is restored. But in the defective individual, the potentiality of the neurone is more limited, and its capacity for reconstitution is lessened; so that there is a progressive failure of power; first manifested by increased irritability, then by spasm, incoördination, and finally by exhaustion. If the vegetative functions remain intact, there is a gradual recuperation, with restoration of capacity and return of function. We can only presume that the changes which produce these results are chemical primarily, and have their origin in instability which is extreme, with the resulting tendency to respond excessively to slight stimuli.